Clipper Coxwain Syllabus

Clipper Round the World Yacht Race

Additional Qualified Person

24 September 2012

Attendees:

[redacted] Clipper Ventures Plc

[redacted] MCA

[redacted] MCA

[redacted] Clipper Ventures Plc

[redacted] Clipper Ventures Plc

Overview

The Clipper Race additional qualified person is to provide a solution, if in the worst case scenario the skipper is incapacitated or in the event of the skipper being a Man Overboard. With consultation with the MCA, Clipper Race training has devised a syllabus which will train crew to be able to safely take a Clipper Race Yacht to the nearest suitable port and if needs be recover a Man Overboard.

Crew Selection Process

The training department will highlight Clipper Round the World crew members who either already have relevant experience or qualifications and/or show the necessary aptitude during their Clipper Training courses. Once the crew members have been highlighted they will then be invited to participate in the extra training.

Outcome of the Clipper Race Additional Qualified Person Training

With discussion with the MCA in regards to our 9 point plan the agreed additional skills and knowledge are as follows:

1. The ability to lay-off an appropriate course
    a. Knowledge of Latitude and Longitude
    b. Scale
    c. Using a Mercator projection chart

2. The ability to work out a position using dead reckoning
    a. Estimated position allowing for tide, currents and leeway
    b. Basic Satellite Navigation
    c. Three point fix, bearings and transits
    d. Use of radar

3. To have an understanding of meteorology and be able to read the wind direction and force from a synoptic chart

4. To be able to choose and adjust the course based on meteorological conditions

5. To be competent to operate marine VHF and on board sat comms and Sat-C

6. To understand and be able to calculate tides
    a. Understanding of tidal flow and ocean currents
    b. Be able to estimate the tide at a standard port
    c. Outline knowledge of secondary ports
    d. Understanding of different tidal patterns that the Clipper Race experiences

7. Safely berth the yacht in a favourable berth location under power
8. Select a suitable anchorage and safely anchor the yacht under sail and power
9. Man overboard

Course Breakdown:

The additional training consists of an RYA Yachtmaster theory course followed by a two day bespoke theory course, this will cover the theoretical part of coastal navigation plus the additional ocean skills required. The practical skills will be taught on board a Clipper 68.

All the required skills will be assessed by the RYA examinations at the end of their theory course as well as supervision by race skippers and a final assessment carried out by Clipper Ventures Senior Training Skipper

Two Day bespoke Clipper Race Training Course - Ocean

- Ocean meteorology including use of grib files and how to plan a yachts route
- Global currents and tides and where to find the information, and awareness of differing tides around the world
- Mercator charts and great circle routes
- Operation of the VHF radio and how to operate include Mayday, Pan Pan, procedures
- Radar and how to use for navigation and collision avoidance

Level 3 – existing Clipper Race training course with continual instruction and assessment by the race skipper

Assessment day, before Race Start – applicants to show they can complete the following actions to the satisfaction of the Senior Training Skipper

- Demonstrate ability to send a Mayday by Sat C
- Demonstrate how to use the sat phones to call the Clipper Race office
- Demonstrate berthing of the yacht
- Demonstrate the working of radar and explain its functions
- Able to download a grib file on the plotter and explain a course that would avoid a made up scenario of deep low pressure or hurricane
- Demonstrate the ability to recover a man overboard

Clipper Coxswain's Course

5 day Coastal Skipper and Yachtmaster offshore theory course syllabus

Day 1:

- 0900-1100 The Magnetic Compass
  - Allowance for Variation
  - Changes of variation with time and position
  - Cause of deviation
  - Swing for deviation (but not correction)
  - Allowance for deviation
  - Different types of compass
- 1100-1300 (lunch 1300-1400) 1300-1500 Tides
  - Causes of tides – Springs and Neaps
  - Tide Tables – sources
  - Tidal levels and Datum
  - Standard and Secondary ports
  - Tidal anomalies
- 1500-1700 Tidal streams
  - Sources of tidal information
  - Tidal information in sailing directions and Yachtsman's almanacs
  - Allowance for tidal streams in computing a course to steer
  - Tide rips, overfalls and races
  - Tidal observation buoys, beacons etc.

Day 2:

- 0900-1300 (lunch 1300-1400) 1400-1600 Position
  - Dead reckoning and estimated positioning
  - Satellite derived position
  - Use of waypoints to fix position
  - Radar Fixes
  - Techniques of visual fixing
  - Fixes using a mixture of position lines
  - Relative accuracy of different methods of position fixing
  - Areas of uncertainty
- 1600-1700 Navigation in restricted Visibility
  - Precautions to be taken in fog
  - Limitations to safe navigation imposed by fog
  - Navigation strategy in poor visibility

Day 3:

- 0900-1000 Buoyage
  - IALA system buoyage in Region A and awareness of B
  - Limitations of buoys as navigational aids
- 1000-1100 Lights
  - Characteristics
  - Ranges – visual, luminous and nominal
  - Rising and dipping distances
  - Light Lists
- 1100-1300 (Lunch 1300-1400) 1300-1400 Pilotage
  - Harbour Regulations and control signals
  - Methods of pre planning
  - Clearing Lines
  - Use of Soundings
  - Transits and Leading lines
- 1400-1700 GPS and chart plotters
  - Principles of operation and limitations of use
  - Raster and Vector charts
  - Datum
  - Importance of confirmation of position by an independent source and keeping a separate record of position
  - Importance of paper charts

Day 4:

- 0900-1300 (lunch 1300-1400) 1400-1600 Meteorology + exam
  - Basic terms the Beaufort scale
  - Air masses
  - Cloud types
  - Weather patterns associated with pressure and frontal systems
  - Sources of weather forecasts
  - Ability to interpret a shipping forecast, weather-fax and weather satellite information
  - Land and sea breezes
  - Sea fog
  - Use of a barometer as a forecasting aid
- 1600-1700 Rules of the road
  - A sound Knowledge of the International Regulations for Preventing Collisions at sea, except annexes 1 and 3

Day 5:

- 0900 -1300 Passage Planning
  - Preparation of charts and notebook for route planning and making, and use at sea
  - Customs regulations as they apply to yachts
  - Routine for navigating in coastal waters
  - Strategy for course laying
  - Use of waypoints and routes
  - Use of weather forecast information for passage planning strategy
  - Sources of local and national regulations
- 1400 – 1730 IRPCS and Chart work exam

Clipper Coxswains Course, Saturday (Day 1) 0900-1300 (lunch 1300-1400) – 2 day bespoke

Day 1:

- Ocean Meteorology
  - Atmospheric Circulation including polar, Ferrell and Hadley cell
  - Coriolis effect
  - Buys Ballot's Law
  - Trade Winds
  - ITCZ (inter tropical convergence zone)
  - Seasonal winds and monsoons
  - Frontal Depressions
  - Tropical Storms
    - Characteristics
    - Occurrence
    - Formation and movement
    - Precursory signs
    - Path of the storm
    - Avoiding tropical storms
  - Weather routeing
    - Use of routeing charts and what information they show
    - Synoptic Charts
    - Grib files and use with NobleTec

- Tides 1400-1530
  - Tidal Theory
  - Different tides experienced on the clipper race
    - Semi-diurnal tide
    - Diurnal tide
    - Mixed tides

- Tidal Stream atlases
- Using an almanac to find tidal information
- Using Admiralty Total Tide to find tidal heights and tidal stream information
- Effect of tide on sea state and coastal phenomenon

- Ocean currents 1530-1700
  - Cause of currents
  - Main circulations
  - Currents experienced in the Clipper Race
  - Where to find current information
    - Routeing Charts
    - Admiralty Ocean passages of the world
    - Admiralty pilot books
  - Effect of wind with and against current

Day 2:

- Mercator charts and great circle routes 0900-1200
  - The difference between gnomic and Mercator charts
  - A great circle route appears as a curve on a Mercator chart
  - Using Sea Pro to calculate a great circle route and how to plot a great circle route on a Mercator chart

- VHF Radio 1200-1300
  - Use of Radio
  - VHF radio protocol and etiquette
  - Setting up an emergency antenna in case of loss of mast
  - How to send an DSC Mayday, pan pan

- Radar 1400-1600
  - How the radar works
  - Setting up the radar
    - Brilliance and contrast
    - Gain
    - Range
    - Tuning
  - Heading modes: Head up, North up, Course up
  - Refining the picture
    - Sea clutter
    - Rain Clutter
  - Blind areas
  - Pilotage by radar
  - Collision avoidance

- Incident management Plan

- Exam 1600-1700

Clipper Coxswains Practical Course (5 day)

- Day 1 AM: Safety brief and in depth look at yacht systems
    - Fire system
    - Gas
    - Bilge system
    - Fresh water
    - Salt water
    - Diesel
    - Engine
    - Generator
    - Electrics

- Depart around 1300
    - Mooring/Anchor practise at suitable location
    - MOB practise in Solent
    - Arrive RCM 1700

- Day 1 PM: Passage planning for next four days
    - Using tides and working out tidal heights, and stream
    - Looking at Synoptic charts and grib files to plot suitable course
    - Working up a passage plan
    - Working up a pilotage plan

- Day 2 -5, On passage and each crew member to rotate through taking charge of the yacht for a short costal passage and demonstrate their abilities in the following:
    - Coastal Navigation
        - Working out EP's and CTS
        - Three point fix
        - Using transits, depth soundings and bearings to plot positions
        - Piloting the yacht to a safe harbour/anchorage
        - Maintaining the ship's log book
    - The upkeep and well being of the yacht and crew
        - Engine/generator checks
        - Deck checks
        - Mother watch duties
        - Crew husbandry
    - Download and load a grib file on to NobleTec sent from the clipper office

  - Carry out a MOB recovery offshore
  - Each crew member will be given a scenario which they will have to take action on and contain the situation, examples are:
    - Engine room fire
    - Steering failure
    - Collision and flooding
    - Suspected spinal injury on deck
    - Abandoning ship
    - Failure of electrics electronic navigation system
    - Approach of severe depression
    - Carry out a search pattern for a MOB
- Arrive back at RCM day 5 1300 for deep clean and debriefs

Assessment for this course will be ongoing with a checklist to be ticked off on successful completion of tasks by a senior training skipper.

- Level 4: Tasks will be assigned by Race Office and these will be handed out and assessed by Race skipper who will then feedback to the Head of Training. Tasks may include the following:
  - Send a practise mayday using sat c
  - Man over board independent of Skipper
  - Is able to use the VHF and find specific information from another yacht
  - If conditions allow moor the yacht or anchor
  - Fire, flooding or abandon ship scenarios
  - Medical scenario
  - Meteorological scenario

Final assessment to be carried out by Head of Training before race start which could include any of the above syllabus.

Extracts from Annex 3 of SCV Code – The manning of small vessels

ONLY TO BE USED IN CONJUNCTION WITH MGN 280

ANNEX 3

THE MANNING OF SMALL VESSELS

This Annex gives information relating to the manning and operation of small vessels in commercial use as follows:

Section 1 - Areas of Application
Section 2 - Minimum Qualifications of the Person in Charge of the Vessel and the Additional Person When Required To Be Carried
Section 3 - Revalidation of Certificates & Licences
Section 4 - Approved Engine Course
Section 5 - Stability and Approved Stability Course
Section 6 - Pilot Boats
Section 7 - Single Handed Operations
Section 8 - Responsibility of the Owner/Managing Agent for the Safe Manning of the Vessel
Section 9 - Keeping a Safe Navigational Watch
Section 10 - Withdrawal of Certificate

General

Vessels to which this Code applies and which comply with its requirements, will be exempt from the need to comply fully with the Merchant Shipping (Training and Certification) Regulations 1997, SI 1997 No. 348, as amended and the Merchant Shipping (Safe Manning, Hours of Work and Watchkeeping) Regulations 1997, SI 1997 No.1320 provided the manning of the vessel is in accordance with the standards given in paragraph 2 below when operating in the areas described in paragraph 1 below.

1. Areas of Application

Commercially operated vessels operating within the following areas should carry at least the qualified personnel shown in Section 2 below:-

Area Category 6	To sea, within 3 miles from a nominated departure point(s) and never more than 3 miles from land, in favourable weather and daylight
Area Category 5	To sea, Within 20 miles from a nominated departure point in favourable weather and daylight.
Area Category 4	Up to 20 miles from a safe haven, in favourable weather and in daylight
Area Category 3	Up to 20 miles from a safe haven
Area Category 2	Up to 60 miles from a safe haven
Area Category 1	Up to 150 miles from a safe haven
Area Category 0	Unrestricted service

2. Minimum Qualifications of the Person in Charge of the Vessel (Skipper) and of the Additional Persons Required to be Carried on Board

2.1 General

2.1.1 All Certificates and Licences of Competency or Service are to be appropriate to the type of vessel in which they are used.

2.1.2 Any person appointed as a skipper must be a minimum age of 18 years.

2.3 Qualifications Required

A vessel should be manned in accordance with Tables 1, 2 and 3 of this Annex. Qualification differing from those tabled, but of equal standing or specialist application (e.g. Sailing Barge Masters Certificate), will be considered.

2.9 Hours of Work Provisions

2.9.1 Fatigue at sea is a serious safety issue and operators should ensure that all vessels certificated under the Code are sufficiently manned to avoid the need to work excessive hours. The skipper is responsible for ensuring, so far as is reasonably practicable, that he/ she and all crew members are properly rested when they begin work and obtain adequate rest when not on duty. The minimum hours of rest for anyone employed on board should be not less than:-

.1 ten hours in any 24-hour period; and

.2 77 hours in any seven day period.

2.9.2 These limits should be observed, although exceptions are allowed so long as they are agreed between the skipper and crew members, and provided that their health and safety, and the safety of the vessel, are not compromised. Such exceptions may take account of more frequent or longer leave periods or the granting of compensatory leave for watchkeeping seafarers or seafarers working on board ships on short voyages.

2.9.3 For boats operating on the basis of watchkeepin g arrangements, a schedule of duties should be drawn up setting out the hours of work and rest periods. In drawing up a schedule, factors to be taken into account may include:

.1 type of operation;

.2 details of the watchkeeping arrangements;

.3 the total workload;

.4 the seriousness of irregular working hours and their contribution to causing fatigue and the importance of scheduling reasonably stable working hours.

2.9.4 The Maritime Working Time Directive also provides anyone employed at sea with an entitlement to a period of leave of at least four weeks' paid leave in each year.

8. Responsibility of the Owner/Managing Agent for Safe Manning of the Vessel

It is the responsibility of the owner/managing agent to ensure that the skipper, and where necessary, the crew of the vessel have, in addition to any qualifications required in 2 above, recent and relevant experience of the type and size of vessel, the machinery on the vessel, and the type of operation in which the vessel is engaged. The owner/ managing agent should also ensure that there are sufficient additional crew on board having regard to the type and duration of voyage/excursion being undertaken.

9. Keeping a Safe Navigational Watch

It is the responsibility of the skipper to ensure that there is, at all times, a person with adequate experience in charge of the navigational watch. In taking this decision the skipper should take into account all the factors affecting the safety of the vessel, including:-

.1 the present and forecast state of the weather, visibility and sea;

.2 the proximity of navigational hazards;

.3 the density of traffic in the area.

TABLE 1 - Deck Manning Requirements Small Vessels in Commercial Use

	CATEGORY		6	5	4	3	2	1	0
SKIPPERS QUALIFICATION ACCEPTABLE FOR GIVEN CATEGORY	Certificate of Competency -Yachtmaster Ocean (MCA Accepted)	Note A	√	√	√	√	√	√	√
	Certificate of Competency or Service - Yachtmaster Offshore (MCA Accepted)	Note A	√	√	√	√	√	√	
	MCA Boatmasters Licence Grade 1,2 & Modified Grade 3	Note A Note B	√	√	√	√	√		
	RYA/DfT Certificate of Competency or Service - Coastal Skipper	Note A	√	√	√	√			
	RYA/DfT Advanced Powerboat Certificate	2 years relevant experience	√	√	√	√			
		12 months relevant experience	√						
	Certificate of competence for appropriate area issued by Competent Authority	Note A Note C	√	√	√	√			
	RYA/DfT Day Skipper Theory & Practical Certificate	Note A 12 months relevant experience	√	√					
	Local Authority Licence for appropriate area	Note A Note D	√						
	RYA/DfT Day Skipper Practical Certificate	Note A	√						
	RYA/DfT Powerboat Level 2 Certificate	12 months relevant experience	√						
ADDITIONAL REQUIREMENTS	Unless operating in the single-handed mode in accordance with Paragraph 7 of this Annex, a second person capable of assisting the Skipper in an emergency should also be on board		√	√	√	√			
	There should also be on board a second person deemed by the skipper to be experienced.						√		
	There should also be on board a second person holding at least an RYA/DfT Certificate of Competency or Service as Coastal Skipper.							√	
	There should also be on board another person holding at least an RYA/DfT Certificate of Competency as either Yachtmaster Ocean or Yachtmaster Offshore.								√

Note 1	Qualifications differing from those tabled, but of equal standing or specialist application will be considered.
Note 2	Vessels regularly engaged on near coastal voyages from ports outside the UK, have to abide by the manning requirements of the Administration regulating that coastal area.
Note 3	Refer section 2.2.1 - RYA/DfT certificates of competency and/or service, and other MCA recognised Yachtmaster certificates, should carry the endorsement - "valid for vessels of up to 24 metres in length used for commercial purposes".
Note A	Certificate should be designated motor or sail as appropriate.
Note B	Existing MCA Boatmasters Licence Grade 3 is only acceptable if it has been validated for the specific area in the license prior to this Code coming into force. All Boatmasters licence holders (1, 2, and modified 3) are subject to the area limitations as defined on the certificate.
Note C	Competent Authority in respect of manning requirements means either the Maritime and Coastguard Agency or an organisation that issues Certificates of Competence which has been applied for and granted recognition by the Maritime and Coastguard Agency as having the appropriate technical and administrative expertise.
Note D	Local Authority Licence - only those Local Authorities that have the approval of the MCA may issue Licences under this Code.

Marlow rope data sheet

D2 Racing 78
& D2 Grand Prix 78

D2 Grand Prix 78 has a Dyneema core and Technora/Polyester blended cover which offers the sailor a high strength, light weight, abrasion resistant, grippy and heat resistant rope.

D2 Racing has a polyester cover with Dyneema core and is the ideal option across all applications on board.

Applications:

- Halyards
- Sheets
- Guys
- Reefing Lines
- Runner-Tails
- Control Lines
- Out/Downhauls
- Vang
- Furlers

Material:

Manufactured from Dyneema SK78:

Core
- HMPE (High-Modulus Polyethylene)
- Very light weight – more than 8x lighter than steel wire for a given strength
- High strength - 80% stronger than steel wire for a given weight
- Low Stretch – see table below
- Good resistance to chemicals and UV
- Zero water shrinkage
- Very low creep HMPE fibre
- Exhibits approximately 20% of the creep experienced by SK75. Further information available.

D2 Racing 78 manufactured from Polyester:

Cover
- Good Abrasion resistance.
- Excellent UV resistance.

D2 Grand Prix 78 manufactured from Technora/Polyester blend

Cover
- Good UV resistance
- Excellent abrasion and heat resistance

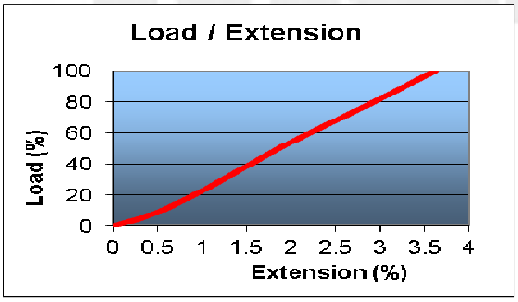
Construction:

Twisted fibre construction:
- Improved abrasion resistance

12 Strand braided construction:
- Optimised pitch to yarn twist – improves strength & longevity
- Firmer rounder rope, aids handling
- Easy to splice
- Flexible product and easily handled
- Torque balanced

24 Plait Braided Cover construction:
- Protects load bearing core from dirt and abrasion
- Round and firm construction

Elongation:



- Typical working elongation (for a bedded in rope):
  - @ 10% of break load: 0.51%
  - @ 20% of break load: 0.89%
  - to break: 3.60%

Physical Properties:

Relative Density:	• 1.15 Exact figure varies with diameter.
Chemical Resistance:	• Excellent resistance to most chemicals (additional information available on request)
UV Resistance:	• Good
Melting Point:	• Core: 140°C Cover: 260°C (Polyester), 500°C (Technora)
Critical Temperature:	• 80°C (prolonged exposure to temperatures over this will result in permanent strength loss)

Terminations:

Spliced eye termination:

- 12 strand core splice
- An allowance of 40x rope diameter should be made for the overall length of the splice.
- To optimise the efficiency of a soft eye splice (without a thimble), the angle formed at the neck of the splice should be 30° or less, meaning that when flat, the length of the eye must be 2.7x the diameter of the object over which the splice will be used.
- A splice will normally increase the diameter of the rope between 1.5x and 1.75x

Diameter		Mass		Average strength			Min strength		
mm	Inch	g/m	lb/100 ft	kg	lb	kN	kg	lb	kN
8	5/16	39	2.62	3487	7671	34.2	2680	5896	26.3
10	13/32	59.2	3.97	5360	11792	52.6	4931	10848	48.4
12	15/32	92.9	6.23	6940	15268	68.1	6246	13741	61.3
14	3/8	116.6	7.82	9274	20403	91.0	8532	18770	83.7
16	5/8	146.9	9.85	11592	25502	113.7	10665	23463	104.6
18	3/4	185.2	12.42	15851	32822	146.4	14266	30195	134.6

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